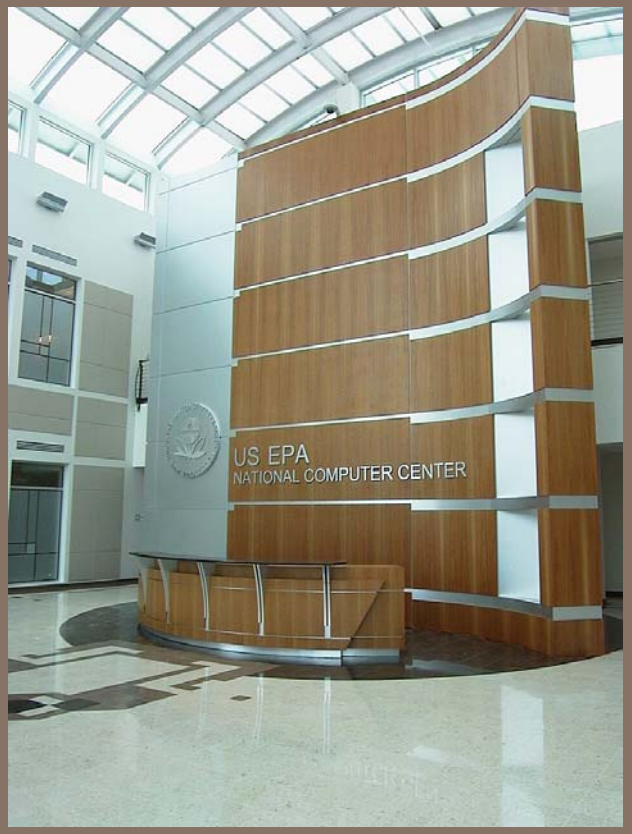
Best Practices

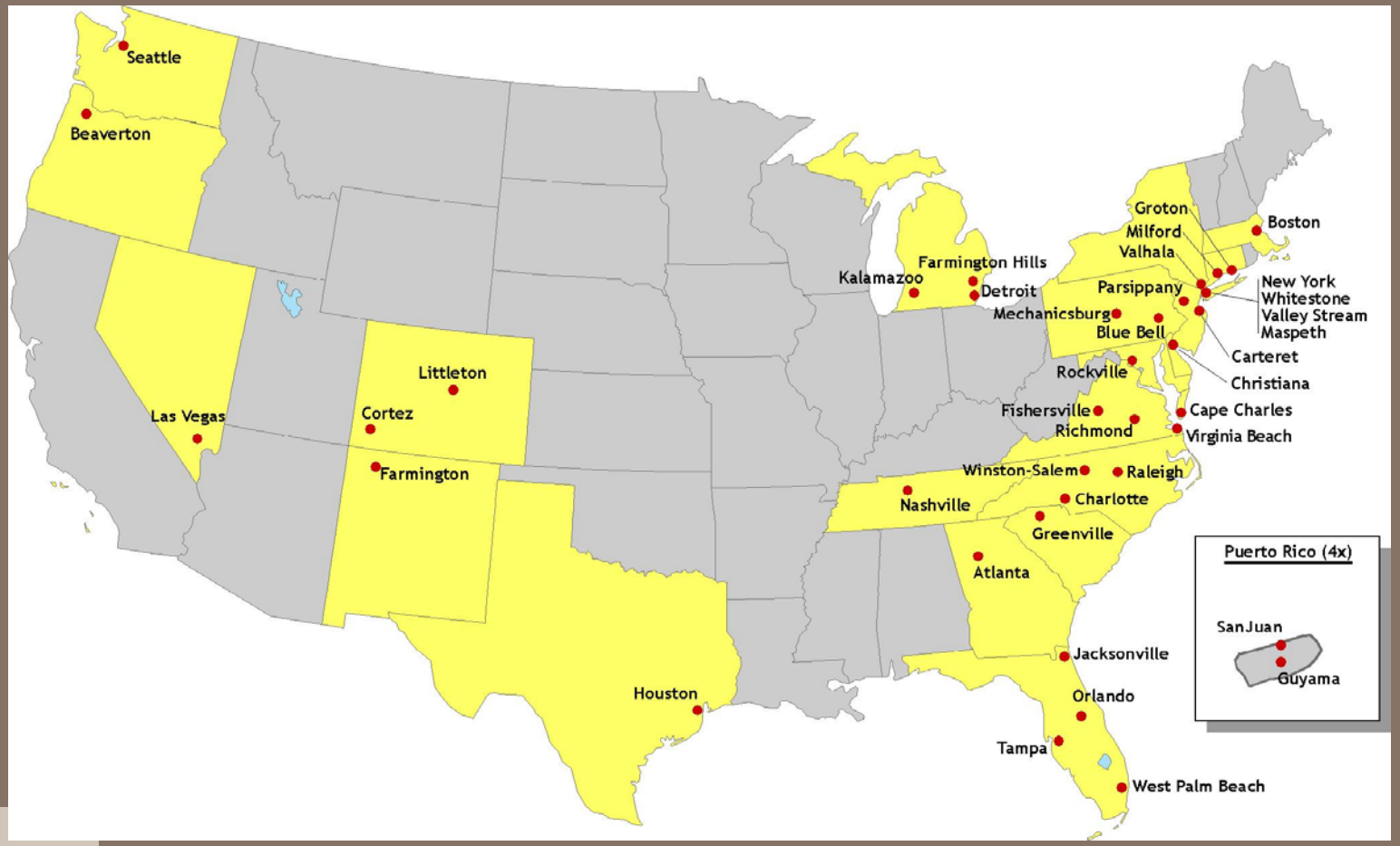
EPA National Computer Center
RTP, North Carolina



Susie Spivey-Tilson
Environmental Director
Skanska USA Building Inc.

SKANSKA

Skanska



SKANSKA

Is This What Comes to Mind When You Think Sustainable Design and Green Building?

SKANSKA

1998

SKANSKA

RTP Campus:

The New EPA Campus at Research Triangle Park Is the Largest Facility Ever Designed and Built by the Agency. Providing State of the Art Labs and Offices for the 21st Century, the New Facility Also Embodies EPA's Commitment to the Environment. The Approach Is Comprehensive. Every Major Decision Has Been Carefully Evaluated for Sustainability. Cost, Functionality and Environmental Impact Have Been Kept in Balance As Materials and Systems Have Been Selected for the Campus. The Result Is Very Green, Very Functional and Very Economical.

SKANSKA

National Computer Center:

-Design /Build
-100,000SF
-50,000 SF - office
-24,000SF computer equip.

Largest Solar Array in the Eastern U.S.

SKANSKA

National Computer Center

- 100 year building
- 30% energy savings
- 80% construction waste diversion
- 100% stormwater treatment
- Naturally lit offices
- Clean indoor air
- Flexible labs
- “No extra budget”

SKANSKA

LEED Scorecard

EPA Computer Center, LEED Project # 72
LEED Version 2.0 Certification: Pending

37 Points Achieved — Possible Points **69**

Certified 26 to 32 points **Silver** 33 to 38 points **Gold** 39 to 51 points **Platinum** 52 or more points

Sustainable Sites — Possible Points 14

Y	?	N			
Y			Prereq 1	**Erosion & Sedimentation Control**	
1			Credit 1	**Site Selection**	1
			Credit 2	**Urban Redevelopment**	1
			Credit 3	**Brownfield Redevelopment**	1
1			Credit 4.1	**Alternative Transportation**, Public Transportation Access	1
1			Credit 4.2	**Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3	**Alternative Transportation**, Alternative Fuel Refueling Stations	1
1			Credit 4.4	**Alternative Transportation**, Parking Capacity	1
1			Credit 5.1	**Reduced Site Disturbance**, Protect or Restore Open Space	1
			Credit 5.2	**Reduced Site Disturbance**, Development Footprint	1
1			Credit 6.1	**Stormwater Management**, Rate and Quantity	1
1			Credit 6.2	**Stormwater Management**, Treatment	1
1			Credit 7.1	**Landscape & Exterior Design to Reduce Heat Islands**, Non-Roof	1
1			Credit 7.2	**Landscape & Exterior Design to Reduce Heat Islands**, Roof	1
			Credit 8	**Light Pollution Reduction**	1

Water Efficiency — Possible Points 5

Y	?	N			
1			Credit 1.1	**Water Efficient Landscaping**, Reduce by 50%	1
1			Credit 1.2	**Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2	**Innovative Wastewater Technologies**	1
			Credit 3.1	**Water Use Reduction**, 20% Reduction	1
			Credit 3.2	**Water Use Reduction**, 30% Reduction	1

Energy & Atmosphere — Possible Points 17

Y	?	N			
Y			Prereq 1	**Fundamental Building Systems Commissioning**	
Y			Prereq 2	**Minimum Energy Performance**	
Y			Prereq 3	**CFC Reduction in HVAC&R Equipment**	
2			Credit 1.1	**Optimize Energy Performance**, 20% New / 10% Existing	2
2			Credit 1.2	**Optimize Energy Performance**, 30% New / 20% Existing	2
			Credit 1.3	**Optimize Energy Performance**, 40% New / 30% Existing	2
			Credit 1.4	**Optimize Energy Performance**, 50% New / 40% Existing	2
			Credit 1.5	**Optimize Energy Performance**, 60% New / 50% Existing	2
			Credit 2.1	**Renewable Energy**, 5%	1
			Credit 2.2	**Renewable Energy**, 10%	1
			Credit 2.3	**Renewable Energy**, 20%	1
1			Credit 3	**Additional Commissioning**	1
1			Credit 4	**Ozone Depletion**	1
			Credit 5	**Measurement & Verification**	1
			Credit 6	**Green Power**	1

Materials & Resources — Possible Points 13

Y	?	N			
Y			Prereq 1	**Storage & Collection of Recyclables**	
			Credit 1.1	**Building Reuse**, Maintain 75% of Existing Shell	1
			Credit 1.2	**Building Reuse**, Maintain 100% of Existing Shell	1
			Credit 1.3	**Building Reuse**, Maintain 100% Shell & 50% Non-Shell	1
1			Credit 2.1	**Construction Waste Management**, Divert 50%	1
1			Credit 2.2	**Construction Waste Management**, Divert 75%	1
			Credit 3.1	**Resource Reuse**, Specify 5%	1
			Credit 3.2	**Resource Reuse**, Specify 10%	1
1			Credit 4.1	**Recycled Content**, Specify 25%	1
			Credit 4.2	**Recycled Content**, Specify 50%	1
1			Credit 5.1	**Local/Regional Materials**, 20% Manufactured Locally	1
1			Credit 5.2	**Local/Regional Materials**, of 20% Above, 50% Harvested Locally	1
			Credit 6	**Rapidly Renewable Materials**	1
1			Credit 7	**Certified Wood**	1

Indoor Environmental Quality — Possible Points 15

Y	?	N			
Y			Prereq 1	**Minimum IAQ Performance**	
Y			Prereq 2	**Environmental Tobacco Smoke** (ETS) **Control**	
1			Credit 1	**Carbon Dioxide** (CO_2) **Monitoring**	1
1			Credit 2	**Increase Ventilation Effectiveness**	1
1			Credit 3.1	**Construction IAQ Management Plan**, During Construction	1
1			Credit 3.2	**Construction IAQ Management Plan**, Before Occupancy	1
1			Credit 4.1	**Low-Emitting Materials**, Adhesives & Sealants	1
1			Credit 4.2	**Low-Emitting Materials**, Paints	1
1			Credit 4.3	**Low-Emitting Materials**, Carpet	1
1			Credit 4.4	**Low-Emitting Materials**, Composite Wood	1
1			Credit 5	**Indoor Chemical & Pollutant Source Control**	1
			Credit 6.1	**Controllability of Systems**, Perimeter	1
			Credit 6.2	**Controllability of Systems**, Non-Perimeter	1
1			Credit 7.1	**Thermal Comfort**, Comply with ASHRAE 55-1992	1
			Credit 7.2	**Thermal Comfort**, Permanent Monitoring System	1
			Credit 8.1	**Daylight & Views**, Daylight 75% of Spaces	1
			Credit 8.2	**Daylight & Views**, Views for 90% of Spaces	1

Innovation & Design Process — Possible Points 5

Y	?	N			
1			Credit 1.1	**Innovation in Design**: NCSU Student outreach program/Educational Tour	1
1			Credit 1.2	**Innovation in Design**: Education Videos by Contractor	1
1			Credit 1.3	**Innovation in Design**: Flat Photovoltaics	1
			Credit 1.4	**Innovation in Design**:	1
1			Credit 2	**LEED™ Accredited Professional**	1

SKANSKA

Contractor Credits – 15 /37

- SS – Credit 6.1 Stormwater Management
- EA Prereq. 1 – Fundamental Commissioning
- EA -- Credit 3 Additional Commissioning
- MR – Credit Credit 2.1,2.2 Construction Waste Management
- MR – Credit 4.1, 4.2 Recycled Content
- MR – Credit 5.1, 5.2 Local/Regional
- IEQ – Credit 3.1, 3.2 IAQ Management Plan During Construction/Before Occupancy
- IEQ – Credit 4.1-4.4 Low Emitting Materials
- Innovation and Design – Credit 1 ISO 14001 Subcontractor Training Videos

SKANSKA

So, how did we do it?

- WE……Who is that?
- TEAM:
  - Owner
  - Occupant
  - A/E
  - Landscape Architect
  - Contractor (Preconstruction and Construction Team)
  - Subs/Vendors/Manufacturers
  - Specialists:
    - (LEED Accredited Professional)
    - Partnering Professionals
- GOALS:
  - Functionality
  - Environmental Design
  - Low life-cycle cost

SKANSKA

Some of the Challenges

- Original design done by a different architect
- Lump Sum Price based on original design
- What is this "**LEEDS**" thing?
- Generate ALL NEW design for established program
- Construction Schedule had to keep up with the campus

SKANSKA

What Made the Project a Success?

- Thorough programming
- Design/Build delivery
- Commitment from everyone for success
- Partnering commitment to environmental stewardship
- Established vision
- Team Work
- Communication and Cooperation
- Accountability
- Bring in necessary expertise

Innovative Management Approaches

- Partnering - Set Goals Together
  - Trust
  - Respect
  - Commitment
- Value Management (not value assassination)
  - Cost | Function | Environment
  - Raise questions every step of the way
- Sustainable Design
  - Train Team
  - Make it as important as the other 4 tires (Quality/Safety/Budget/Schedule)
  - Bring in the experts!

Specifications

- 01100 Environmental Requirements
- 01120 Environmental Impact of Materials
- 01445 Testing for Indoor Air Quality, Baseline IAQ, and Materials
- 01450 Sequence of Finishes Installation
- 01690 Waste Materials Management and Recycling

*****Careful review of all submittals and substitutions for compliance with voc limits, recycled content, local availability…**

SKANSKA

Recycling Facility at Research Triangle Park

Materials Recycled

- Land clearing:
  - Trees: 826 tons
  - Roots,stumps: 100 tons
- Office Paper:
  - 8 tons
- Steel/Metal:
  - 30.5 tons
- Pallets:
  - 9 tons
- Gypsum/Drywall:
  - 42 tons

With and Without Land Clearing

Tons generated
1216.68
Tons recycled
1014.32
83% recycled

WITHOUT:
290 Generated
88.32 Recycled
30% recycled

SKANSKA

How does LEED™ affect your roles and responsibilities on a project?

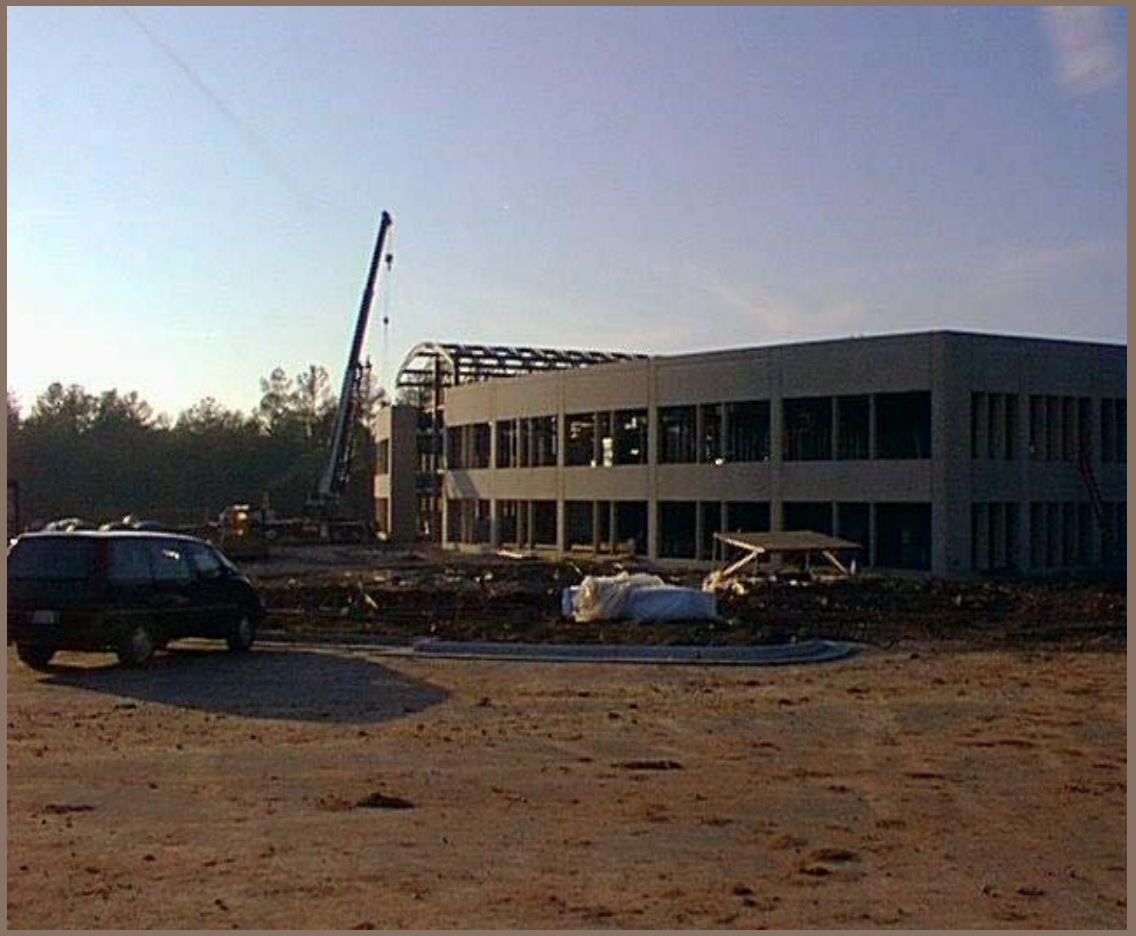
Stages of the Project

- Business Development / Project Acquisition
- Preconstruction / Design Development
- Construction
- Post Construction

Thank You!

Questions/Comments

SKANSKA



SKANSKA